

Cave Opilionida in Bulgaria

Petar BERON and Plamen MITOV

Order Opilionida is represented in Bulgaria by 45 species (STAREGA, 1976; MITOV, 1994, 1995; BERON, 1994) including 22 found in caves. Four of them are considered troglobites: *Paranemastoma bureschi*, *Paralola buresi*, *Siro beschkovi* and *Tranteeva paradoxa*). They all live in caves of Western Stara Planina and the western part of Central Stara Planina. *Paralola* and *Tranteeva* are endemic Bulgarian genera.

The most widespread species of Opilionida in Bulgarian caves is *Paranemastoma radewi* (Roewer), known from 114 caves in Stara planina, Rhodopes and the Struma valley area. This troglophile species is known also from Yugoslavia (HADŽI, 1973) and will be certainly found also in Macedonia and Northern Greece.

The remaining 17 species are troglonexes. Only *Leiobunum rumelicum* Šilhavý occurs more regularly in the entrance part of caves (24), all other species are occasional visitors, found in 1—10 caves.

From the vast territory of former Yugoslavia, with its extensive Karst, HADŽI (1973) lists 164 species in the Order Opilionida, 16 of them considered "eucaval" (5 Cyphophthalmi, 8 Laniatores, 2 Dyspnoi and 1 Eupnoi). These figures have been amended by MUČALICA (1988). According to this author, the number of species should be reduced to 126. KARAMAN (1990, 1992) adds 2 new species, MITOV (1995 b) — 1 and the total number of ex-Yugoslav Opiliones is now about 129.

The Suborder Laniatores was represented in Bulgaria until now only by *Paralola buresi*. The first Laniatores outside caves was found by P. Beron in Belasitsa Mt. (a species of *Ausobskya*, fam. Phalangodidae), and will be described by him. Another, still undescribed *Ausobskya* species, was found by P. Beron in a cave of Salamin Island, Greece. This is one of the very few species of Opilionida inhabiting Greek caves. In the caves of Greece this group is almost missing (observations of P. Beron from the visit of more than hundred caves in continental Greece and the islands).

Quite remarkable is the complete absence (so far) of troglobite Opilionida in the caves of South Bulgaria.

Suborder Cyphophthalmi

Fam. Sironidae

Siro duricorius (Joseph, 1868) — Toplya (Lv 28). — JUBERTHIE (1991).

Siro beschkovi Mitov, 1994 — very numerous in the cave Haydushkata Dupka (Pn 2) — MITOV (1994). — Troglobite, endemic for Bulgaria.

Tranteeva paradoxa Kratochvil, 1958 — Rushovata Peshtera (Lv 20). — KRATOCHVIL (1958a); — Toplja (Lv 28), Jalovica (Lv 29). — JUBERTHIE (1991). — Troglobite, endemic for Bulgaria.

Suborder Laniatores

Fam. Phalangodidae

Paralola buresi Kratochvil, 1951 — Temnata Dupka (Sf 30). — KRATOCHVIL (1951, 1958a); Zidankata (Sf 29), Svinskata Dupka (Sf 33), Kozarskata Peshtera (Sf 34) — BERON and GUÉORGUIEV (1967), STAREGA (1976). — Troglobite, endemic for these caves, situated near Lakatnik railway station.

Suborder Palpatores

Fam. Trogulidae

Trogulus tricarinatus (Linnaeus, 1758) — trogloxene, known from 2 Bulgarian caves (BERON and GUÉORGUIEV 1967; STAREGA, 1976). New locality: Lisitsha Dupka (Kl 6), 1 ♀, 19.XI.1994, V. Guéorguiev leg.

Fam. Dicranolasmatidae

Dicranolasma scabrum (Herbst, 1799) — Propoda (Pk), near Kalishta, 1 ♂, 12.XII.1994, P. Stoev leg. — trogloxene, first record in cave.

Fam. Nemastomatidae

Pyza bosnica (Roewer, 1919) (= *Nemastoma bosnicum orientale* Kratochvil, 1958). — trogloxene, known from 3 Bulgarian caves (BERON and GUÉORGUIEV, 1967; STAREGA, 1976).

Histicostoma drenskii Kratochvil, 1958 — trogloxene, known from 1 cave in the Rhodopes (KRATOCHVIL, 1958 b).

Paranemastoma (*P.*) *radewi* (Roewer, 1926) (= *Nemastoma radewi* Roewer = *N. (Dromedostoma) paspalevi* Krat. = *N. (D.) atanasovi* Krat. = *N. (D.) atanasovi balcanica* Krat. = *N. (D.) markovi* Krat.) — the most widespread harvestmen species in Bulgarian caves, known so far from 71 cave localities (ROEWER, 1926; KRATOCHVIL, 1958b; BERON and GUÉORGUIEV, 1967; STAREGA, 1976).

New localities (caves): Dinevata Pesht (Sf 3), 1 ♂, 1 ♀, 10.V.1992, B. Dimitrova leg.; Truvninata (Sf 21) near Dobravica, 3 ♂♂, 1 ♀, 1 juv., 25.I.1976, P. Beron and V. Beshkov leg.; Peshtereto (Sf 27) near Lakatnik, 1 juv., 19.IV.1992, D. Kozhuharov leg.; Temnata Dupka (Sf 30) near Lakatnik, 1 juv., 16.X.1988, P. Mitov leg.; Kalugerica (Sf 83) near Baylovo, 1 ♂, 1973, P. Beron leg.; Vihrenskata Propast (Bl 6), ca. 2650 m, Pirin, 2 ♂♂, 29.VIII.1972, P. Beron leg.; Sedlarkata (Pn 4) near Rakita, 4 ♀♀, 2 juv.,

10.IX.1968, P. Beron leg.; Gininata Peshtera (Pn 5) near Sadovec, 2 juv., 8.XII.1988, R. Todorov leg.; Troana (Tn), v. Emen, 2 ♂♂, 30.IV.1995, T. Ivanova leg.; Kalnata Dupka (Tn), v. Arbanasi, 1 ♂, 1.III.1970, N. Vihodtsevski leg.; Musinskata Peshtera (Tn 12) near Musina, 2 ♂♂, 2 ♀♀, 26.XII.1992, P. Stoev and D. Aleksandrova leg.; Bamba-lova Peshtera (Tn 14) near Emen, 1 ♀, 24.XI.1990, T. Ivanov leg.; Lucifer (Sl 31) near Kotel, 1 ♀, 2.X.1993, D. Kozhuharov leg.; Peshterata (Gb 10) near Sokolskiya Manastir, Gabrovo, 3 ♂♂, 2 ♀♀, 6.VII.1984, P. Beron leg.; Novata Peshtera (Pz 4), 1 ♀, 1 juv., 27.VI.1986, P. Beron leg.; Gargina Dupka (Pv 7) near Mostovo, 3 ♀♀, 14.III.1992, D. Dimitrov leg.; Imamkaya (Sm), summit Tsherven, W. Rhodopi, 3 ♂♂, 1 ♀, 26.IX.1994, B. Petrov leg.; Modurska Peshtera (Sm), Rhodopi, ca. 1600 m, 4 ♂♂, 26.IX.1994, B. Petrov leg.; Boevskata Peshtera (Sm 16) near Boevo, 1 juv., 29.V.1964, D. Raitshev leg.; Trite Dupki (Sm 36), 1 ♂, 1 ♀, 2.VIII.1982, D. Raitshev leg.; Propast 8 (Vr 50) near Zverino, 1 ♀, 5.V.1968, "Edelweiss" Club leg.; Pantshovi Gramadi (Vr 76) near Zverino, 100 m deep, 1 ♀, 4.II.1962, Z. Iliev leg.; Jamata (Lv), v. Tshaushov Dol — v. Neshkovci, 2 ♀♀, 2 juv., 28.VII.1970, H. Deltshhev leg.; Metshata Dupka (Lv), v. Lesidren, 1 ♂, 1 ♀, 3 juv., 5.X.1994, R. Pandourska leg.; Balduinovata Peshtera (Lv), v. Lesidren, 2 ♂♂, 2 ♀♀, 2 juv., 5.X.1994, R. Pandourska leg.; Vodopada (Lv 54) near Krushuna, 1 juv., 19.VII.1972, P. Beron leg.; Gurlyova Dupka (Lv 57), 1 ♀, 3 juv., 14.VIII.1994, P. Stoev leg.; Skravenika (Lv 58), 2 ♂♂, 2 ♀♀, 2 juv., 18.VIII.1968, H. Deltshhev leg.; Golyamata Yama (Lv 59) near Teteven, 3 ♂♂, 7 ♀♀, 1 juv., 24.XI.1968, P. Beron leg.; Malkata Yama (Lv 64) near Teteven, 1 ♀, 2 juv., 24.XI.1968, P. Beron leg.; Shopa (Lv 67) near Karlukovo, 1 ♀, 2 juv., 24.VIII.1966, H. Deltshhev leg.; Gradezh-nica (Lv 73) near Divtshovoto, 3 ♀♀, 27.XI.1968, P. Beron leg.; Opushenata (Lv 86), v. Neshkovci, 1 ♂, 2 ♀♀, 3 juv., 30.VII.1970, H. Deltshhev leg.; Kiselashkata Peshtera (Lv 87) near Tsherni Vit, 1 ♂, 1 juv., 10.IX.1988, B. Garev leg.; Lyastovica (Lv 88), 1 ♂, 3.III.1989, E. Naneva leg., 2 ♀♀, 5.X.1989, I. Pandourski leg.; Tyasnata Peshtera (Lv 89) near Mikre, 1 ♀, 26.IV.1991, B. Petrov leg.; Borova Dupka (Lv 90) near Neshkovci, 2 ♂♂, 1 ♀, 13.XII.1969, P. Beron leg.; Dantshova Dupka (Lv 91) near Uglen, 1 ♀, 1 juv., 17.VIII.1974, P. Beron leg.; Bezimenna (Lv 93) near Lovetsh (Polenica), 3 juv., 23.VII.1982, P. Beron leg.; Planinec (Lv 94) near Glozhene, 1 ♂, 5 ♀♀, 27.IV.1992, D. Kozhuharov leg.; Vodnite Dupki (Lv 95) near Vidima, 2 ♀♀, 24.VII.1982, P. Beron leg.; Petrova Mandra (Lv 96) near Vidima, 1 ♀, 1 juv., 25.VII.1982, P. Beron leg.; Vul-tshite Dupki (Lv 97) near Vidima, 1 ♀, 23.VII.1982, P. Beron leg.; Turskata Tsherkva (Lv 99), v. Gorsko Slivovo, 1 ♂, 2 juv., 21.VII.1982, P. Beron leg. — Troglophile, wide-spread in West Bulgaria and in Stara Planina, eastward to Kotel. Not known from Strandzha, eastern part of Rhodopes and Dobrudzha. Females with eggs have been found all the year.

Paranemastoma (P.) aurigerum aurigerum (Roewer, 1951). New localities: Tshoveshkata Peshtera (Sm 6) near Orehovo, 3 juv., 14—15.IX.1992, P. Stoev et al. leg.; Imamova Dupka (Sm 13) near Jagodina, 1 ♀, 1.III.1985, D. Draganova leg. Gargina Dupka (Pv 7) near Mostovo, 2 ♂♂, 2 ♀♀, 14.03.1992, D. Dimitrov leg.; Ivanova Voda (Pv 14), 2 ♂♂, 28.VIII.1970, H. Deltshhev leg.; Ahmetyova Dupka (Pv 16), 1 ♂, 28.VIII.1970, H. Deltshhev leg. — Troglaxene, known from 10 caves in the Rhodopes (STAREGA, 1976 and present paper).

Paranemastoma (Buresiolla) bureschi (Roewer, 1926) — known so far from 27 Bulgarian caves (ROEWER, 1926; ATANASOV and STEFANOV, 1951; KRATOCHVIL, 1958 b;

BERON and GUÉORGUIEV, 1967; STAREGA, 1976; BERON, 1978). New localities: Radolova Yama (Sf2) near Ginci, 3 ♀♀, with 3—5 eggs, 3 juv., 27.IX.1970, P. Beron leg.; Bezi-mennata Peshtera (Vr), near summit Krustanova Mogila, ca. 1300 m, 1 ♂, 21.V.1994, B. Petrov leg.; Malkata Metsha Dupka (Vr 27), 1 ♂, 4 ♀♀, 24.X.1968, P. Beron leg.; Ledenishka Yama (Vr 35) near Ledenika, Vraca, 1 ♂, 20.XI.1988, R. Pandourska leg.; Belyar (Vr 53), 1 ♂, 07.XI.1970, V. Beshkov leg.; Haydushka Dupka (Vr 83) near Bistrec, 1 ♂, 1 juv., 26.IV.1970, P. Beron leg. — Troglobite, common in the caves of Western Stara Planina (Balkan Range). The locality "Saeva Dupka — Lv 18" seems doubtful. The material, mentioned by ATANASOV and STEFANOV (1951), does belong to *Buresiolla bureschi* (see STAREGA, 1976), but it could be mislabelled. As this species has been found by us in the cave Shamak (Sf81) at the border between Bulgaria and Serbia (BERON, 1978), it lives most probably also in East Serbia. MUČALICA (1988) lists *Paranemastoma (Buresiolla) bureschi* among the Yugoslav harvestmen.

Mitostoma gracile (Redikorzev, 1936) — troglaxene, known from 1 Bulgarian cave (STAREGA, 1976). New locality: Stoyanovata Peshtera (Bs 9) near Kosti, 2 ♂♂, 1 ♀, with eggs, 2 juv., 19.VI.1980, P. Beron and S. Andreev leg.

Fam. Phalangiidae

Leiobunum rumelicum Šilhavý, 1965 — known so far from 16 Bulgarian caves (STAREGA, 1976 — this author thinks that "es ist wohl als "troglaxène régulier" zu betrachten"). New cave localities: Vodnata Peshtera (Pz 10) near Peshtera (Kupena), 1 ♂, 30.XII.1991, B. Petrov leg.; Haydushkata Dupka (Pv 15) near Dobrostan, 1 juv., 5.VII.1962, H. Deltshv leg.; Julen Ere (Pv 17) near Hristo Danovo, 1 juv., 16.V.1968, P. Beron leg.; Borowskata Vodna Peshtera (Pv 22) near Mostovo, 1 juv., 1.III.1992, P. Stoev leg.; Dupkata (Sm 3) near Progled, 2 juv., 16.X.1970, D. Dancau leg.; Rizovica (Sm 23) near Mogilica, 1 ♂, 9 juv., 3.VIII.1969, H. Deltshv leg.; Karnata Peshtera (Sm 37) near Jagodina, 1 ♂, 20.XI.1982, P. Beron leg.; Modurska Peshtera (Sm), Rhodopi, ca. 1600 m, 1 juv., 26.IX.1994, B. Petrov leg. — Regular troglaxene. Out of the 24 cave localities 15 are situated in the Rhodopes, 8 in Stara Planina and 1 in Osogovo.

Lacinius horridus (Panzer, 1794) (= *L. gallipoliensis* Roewer, 1923 = *L. dentiger* sensu BERON and GUÉORGUIEV, 1967 — det. incor. by W. Starega) — troglaxene, known from Bulgarian caves (ROEWER, 1926; BERON and GUÉORGUIEV, 1967; STAREGA, 1976).

Phalangium opilio Linnaeus, 1758 — troglaxene, known from 3 Bulgarian caves (ROEWER, 1926; STAREGA, 1976).

Zacheus crista (Brullé, 1832) — so far known from 3 Bulgarian caves (ROEWER, 1926; STAREGA, 1976). New localities: Zhivata Voda (Pk 2) near Bosnek, 1 ♂, 22.VI.1969, P. Beron leg.; Razklonenata Peshtera (Kr 7) near Oreshari, 1 juv., 3.IV.1992, B. Petrov leg.; Peshterata pri Kodzha Kad (Kr 8) near Byalopolyane, 1 juv., 6.IV.1992, B. Petrov leg. — Troglaxene.

Rafalskia olympica (Kulczyński, 1903) — troglaxene known from 1 cave in the Rhodopes (STAREGA, 1976).

Opilio saxatilis C. L. Koch, 1839 — troglaxene known from 1 cave in Stara Planina (STAREGA, 1976).

Opilio ruzickai Šilhavý, 1938 — troglaxene known from 2 caves in Stara Planina (BERON and GUÉORGUIEV, 1967; STAREGA, 1976).

Egaenus convexus (C. L. Koch, 1835) — troglaxene known from 2 caves in Stara Planina (ŠILHAVÝ 1965; STAREGA, 1976). New localities: Jalovitsa (Lv 29) near Golyama Zhelyazna, 2 ♀♀, 12.VI.1993, B. Georgiev leg.

Nelima pontica Charitonov, 1941 — Ezeroto Cave (Bs 5) near Mladezhko, 1 ♂, 21.VI.1980. — Troglaxene (or troglophile), first record in cave. The species has been published recently for Bulgaria by MITOV (1995 a).

Amilenus aurantiacus (Simon, 1881) — Troglaxene, known from 1 Bulgarian cave (STAREGA, 1976).

We are grateful to many cavers and colleagues Biospeleologists for the material, entrusted to us for study. This material is preserved in the Arachnid Collection of National Museum of Natural History in Sofia (identified by P. Mitov). Until the end of 1994 Opilionids are known from 153 Bulgarian caves. The abbreviation used in this paper appear in the catalogues of Bulgarian cave fauna (GUÉORGUIEV and BERON, 1962; BERON and GUÉORGUIEV, 1967; BERON, 1972, 1994). The names of the old districts have been used: Blagoevgrad (Bl), Burgas (Bs), Gabrovo (Gb), Kurdzhali (Kr), Kyustendil (Kl), Lovetsh (Lv), Pazardzhik (Pz), Pernik (Pk), Pleven (Pn), Plovdiv (Pv), Sofia (Sf), Sliven (Sl), Smolyan (Sm), Veliko Turnovo (Tn), Vraca (Vr).

References

- ATANASOV N., A. STEFANOV. 1951. Die Höhle "Seeva dupka". — Bull. Inst. Zool., **1**: 234—275 [In Bulgarian].
- BERON P. 1972. Essai sur la faune cavernicole de Bulgarie. III. Résultats des recherches biospéologiques de 1966 à 1970. — Int. J. Speleol., **4**: 285—349.
- BERON P. 1978. Aperçu sur la composition, l'origine et la formation de la faune cavernicole de la Stara planina occidentale (Bulgarie). — Int. J. Speleol., **9** (1977/78): 197—220.
- BERON P. 1994. Résultats des recherches biospéologiques en Bulgarie de 1971 à 1994 et liste des animaux cavernicoles bulgares. — Série Tranteeva, **1**: 137 pp.
- BERON P., V. GUÉRGUIEV. 1967. Essai sur la faune cavernicole de Bulgarie. II. Résultats des recherches biospéologiques de 1961—1965. — Bull. Inst. Zool. Mus., **24**: 151—212.
- GUÉRGUIEV V., P. BERON. 1962. Essai sur la faune cavernicole de Bulgarie. — Ann. de Spéléologie, **17** (2): 285—356; (3): 357—441.
- HADŽI, J. 1973. Catalogus faunae Jugoslaviae, **III/4**, Opilionidea, Ljubljana, 23 pp.
- JUBERTHIE Ch. 1991. Sur *Trenteeva paradoxa*, Opilion troglobie et les Opilions Cyphophthalmes de Bulgarie. — Mém. Biospéol., **18**: 263—267.
- KARAMAN I. M. 1990. *Dicranolasma mladeni*, n. sp., a new harvestman (Arachnida, Opiliones) from Yugoslavia. — Bull. Nat. Hist. Mus. Belgr., **B**, **45**: 143—148.
- KARAMAN I. M. 1992. One new species of genus *Rilaena*, Šilhavý, 1965 (Opiliones, Phalangidae) from Serbia. — Bull. Nat. Hist. Mus. Belgr., **B**, **47**: 131—137.
- KRATOCHVIL J. 1951. Výsledky bulharské biospeologie v jeskyni „Temnata dupka“. — Českosl. Kras, **4** (1—2): 8—12.
- KRATOCHVIL J. 1958 a. Die Höhlenweberknechte Bulgariens (Cyphophthalmi und Laniatores). — Práce Brněn. Zák. ČSAV, Brno, **30** (9) 375: 372—396.
- KRATOCHVIL J. 1958 b. Die Höhlenweberknechte Bulgariens (Palpatores — Nemastomatidae). — Práce Brněn. Zák. ČSAV, Brno, **30** (12) 379: 523—576.
- MITOV P., 1994. *Siro beschkovi*, spec. nov. aus Bulgarien (Arachnida, Opiliones, Cyphophthalmi). — Spixiana, **17** (3): 275—282.

- MITOV P. 1995 a. New faunistic and chorologic data about Opiliones (Arachnida) from Bulgaria. — Ann. Univ. Sofia "St. Kl. Ohridski", 1 — Zool., **86—87**: 63-65.
- MITOV P. 1995 b. Ein neuer *Graecophalangium* Roewer aus Mazedonien (Arachnida, Opiliones, Phalangiidae). — Spixiana, **18** (2): 105—109.
- MUČALICA M. 1988. The review of the fauna of harvestmen (Opiliones, Arachnida): investigations in Yugoslavia. — XI Coll. Europ. Arachnol., Berlin, 28.08. — 02.09.1988. Techn. Univ. Berlin, Dok. 38: 309—315.
- ROEWER C. 1926. Opilioniden aus Höhlen des Balkan-Gebirges. — Entom. Mitt., Berlin, **15** (3/4): 299—302.
- ROEWER C. 1951. Über Nemastomatiden. Weitere Weberknechte XVI. — Senckenbergiana, Frankfurt a. M., **32** (1/4): 95—153.
- ŠILHAVÝ V. 1965. Die Weberknechte der Unterordnung Eupnoi aus Bulgarien; zugleich eine Revision europäischer Gattungen der Unterfamilien Oligolophinae und Phalangiinae (Arachnoidea, Opilionea). — Acta ent. Bohemoslov., Praha, **62** (5): 369—406.
- STARĘGA W. 1976. Die Weberknechte (Opiliones, excl. Sironidae) Bulgariens. — Ann. Zool., Warszawa, **33** (18): 287—433.

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Опилиони (Opilionida) в пещерите на България

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(Резюме)

Досега в България са известни 45 вида от разред Opilionida, 22 от които са намерени в пещери. Всичките 4 известни троглобионти (*Siro beschkovi* Mitov, *Tranteeva paradoxa* Kratochvil, *Paralola buresi* Kratochvil и *Paranemastoma bureschi* Roewer) обитават пещери в Западна и Средна Стара планина и Западния Прегбалкан. *Paralola* и *Tranteeva* са ендемични за България рогове, а *Siro beschkovi* — ендемичен вид. Най-разпространеният опилюон в българските пещери е троглофилният *Paranemastoma radewi* (Roewer). Той е намерен в 114 от общо 153 пещери, от които в България са известни опилюони.

Останалите 17 вида се смятат за троглоксени. Редовен троглоксен е *Leiobium rumelicum* Šilhavý, съобщен от 24 пещери, а останалите 16 вида са съобщени от 1—10 пещери и са случайни троглоксени.

В българските пещери са представени и трите подразреда на Opilionida: Cyphophthalmi, Laniatores и Palpatores. И от трите има троглобионтни представители.